Winding Device

Specification

The invention relates to a winding device for winding up and unwinding goods in web form, in particular a conveyor belt, whereby the goods to be wound are supported on a substructure.

Goods in web form are, for example, conveyor belts, sealing webs, rubberized fabrics, and printing blankets. Conveyor belts, which have a carrying side and a running side, as well as, in most cases, an embedded strength support in the form of woven fabric, steel cables, or aramid cables, are of particular importance. The winding technology of conveyor belts will therefore be discussed in greater detail in the following.

For the production of the endless connection (EP 1 053 447 B1) of a conveyor belt on site, on or next to the conveyor system, it is necessary to unwind the conveyor belt, which has been delivered as a round winding. Until now, this was done using a winding stand, the axle of which, which is set down on both sides, is inserted through the center of the

conveyor belt winding. In this regard, there is a comprehensive state of the art, whereby the references DE 38 37 149 C2 and U.S. 5,735,482 are cited as examples.

The disadvantages of a winding stand are its great weight and its large dimensions. Since conveyor belt assembly takes place on construction sites, in most cases in a foreign country, winding stands can be made available only at great effort and expense.

For the purpose of avoiding the aforementioned disadvantage, the new winding device is characterized, according to the characterizing part of claim 1, in that the substructure has at least two support rollers, which are disposed at a distance from one another, whereby the support rollers are adjustable, changing the distance, in order to adapt themselves to any winding diameter, whereby the movement sequence of the support rollers takes place in such a manner that the wound goods are furthermore securely supported.

Practical embodiments of this winding device are named in claims 2 to 6.

The invention will now be explained, using exemplary embodiments and making reference to schematic drawings. These show:

Fig. 1 a winding device with the feed or take-off region of the conveyor belt, respectively;

Fig. 2 an enlarged detail view of the winding device according to Fig. 1;

Fig. 3a a side view of a support;

Fig. 3b a front view of a support;

Fig. 4 the substructure of a winding device, with a drive motor for a support roller.

Fig. 1 shows a winding device 1 for winding up and unwinding a conveyor belt 2, whereby the two belt directions are indicated with a double arrow here. The wound goods 3 are deposited on a substructure 4. The substructure has two support rollers 5 and 6, which are adjustable horizontally and vertically. The movement sequence of these two support rollers within the

substructure (double arrows) will be described in greater detail in connection with Fig. 2.

Furthermore, the winding device 1 is provided with lateral supports 7, the functional sequence of which will also be explained in greater detail below, within the scope of the description of Figures 2, 3a, and 3b.

Within the feed or take-off region 8, the conveyor belt is guided on additional support rollers 9 as well as a deflection drum 10.

Fig. 2 shows details of the substructure 4 of the winding device 1. The two support rollers 5 and 6 are disposed at a distance A_1 (reference point: center point of support roller) from one another, with reference to the wound goods having a winding diameter D_1. As the conveyor belt 2 is fed in further, wound goods 3 having an increased winding diameter D_2 are formed. At the same time, an increase in the distance A_2 between the support rollers occurs. As the diameter of the wound goods increases further, a distance A_3 is finally reached. It is of significant importance that the support rollers are adjustable, changing the distance between them, in order to adapt to any winding diameter,

whereby the wound goods must furthermore be securely supported. It is advantageous if the support rollers are adjustable horizontally and vertically. In this connection, the horizontal adjustment takes place essentially by means of the change in diameter of the wound goods. The additional vertical adjustment can take place indirectly, for example, by way of a height regulation of the substructure. This combined movement sequence of the support rollers can also be implemented by means of a combination of a horizontal and vertical guide rail within the support roller region, specifically without any height regulation of the substructure.

The winding device 1 is provided with lateral supports 7 that are set onto the center M_1 and M_2, respectively, of the wound goods 3. This additional measure is advantageous for those cases where the winding device cannot be sufficiently aligned horizontally.

According to Fig. 3a and 3b, the support 7 is provided with a wheel 11 that is adjustable in height (Fig. 3b, region 12), whereby the movement sequence, again, is indicated with double arrows. In this connection, the wheel is set

to the center of the wound goods. Lateral migration is prevented in this manner.

Fig. 4 again shows the substructure 4 with the two support rollers 5 and 6 for the conveyor belt 2. The support roller 5 is provided with a drive motor 13 and/or a brake, in order to accelerate or delay the winding process, respectively. In addition, this makes it possible to wind the conveyor belt up, i.e. back up.

Reference Symbol List

1	winding device
2	goods in web form (conveyor belt)
3	wound goods (belt winding)
4	substructure
5	first support roller
6	second support roller
7	support
8	feed or take-off region
9	support rollers
10	deflection drum
11	wheel
12	height-adjustable region of the wheel
13	drive motor
A_1, A_2, A_3	distance between two support rollers
D_1, D_2	winding diameter
M_1, M_2	center of the wound goods